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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 02/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

A9-10

Office Action Summary	Application No.	Applicant(s)	
	09/845,743	FEIST ET AL.	
	Examiner	Art Unit	
	Kevin M Bernatz	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-72 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-72 is/are rejected.

7)☒ Claim(s) 21,26,33,36 and 67 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5-9 .
4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: .

DETAILED ACTION

Examiner's Comments

1. Claims 1, 8, 30, 31 and 38 recite limitations in the tilt and/or axial displacement, yet applicants have not recited the test method used to measure these properties. For purposes of evaluating the prior art, the examiner has interpreted tilt and axial displacement in the broadest reasonable interpretation and any art recognized measurement method may be used for these properties. The examiner has interpreted tilt and axial displacement to be measurements of the warp and deflection of a disk, respectively. See Sandstrom (U.S. Patent No. 5,972,461), where they measure the warp (i.e. tilt) and axial displacement of a disk (*col. 3, lines 5- 18; col. 3, line 64 bridging col. 4, line 14; col. 5, lines 13 – 14; and Figure 4 – where Figure 4 shows axial displacement vs. disk thickness and Sandstrom discloses Figure 4 as "a graph illustrating variations in deflection for disks having different substrate thick nesses", hence implying that axial displacement is simply another word for deflection*).

2. Claims 15, 40 and 56 require a core having the limitation "varied thickness". This limitation has been interpreted in view of the specification (*Figures 8 – 13 and 25 – 35; and claims 16, 41 and 57*) and has been given its broadest reasonable interpretation as allowing for any varying thickness along any axis (length, width, height, radial or tangential), including cases where the core varies in thickness from zero thickness in some regions to a non-zero thickness in others.

3. The examiner notes that the claimed "data layer" appears to refer to a magnetic recording layer, a magneto-optical recording layer or an optical recording layer based upon applicants' disclosure. However, the examiner notes that a written label on a CD would read on applicants' claimed limitations since a written label is a "data layer" (contains information on the artist, maker of the disk, etc), it is located on the substrate and it can be at least partly read from by at least one energy field (visual light) and the energy field (visual light) contacts the data storage layer (i.e. label) before contacting the substrate the label is written on. As such, the examiner has given the present claims the broadest reasonable interpretation when evaluating the prior art.

4. The examiner notes that the claimed language "the substrate is plastic" has been interpreted as open language (*see claim 67*). Should applicants desire to restrict the substrate to only plastic, applicants are recommended to either state explicitly on record that the transitional phrase "is" is to be interpreted as closed or to amend the claim to read "the substrate consists of plastic" (the latter is preferred since "consists" is the conventional language for a closed transitional phase).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1 – 72 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a storage ***disk***, does not reasonably provide

enablement for a storage tape or ribbon. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. Amendment to change "A data storage media" to "A data storage disk" would overcome this rejection. For purposes of evaluating the prior art, the claims have been interpreted in view of the specification as described above, especially in view of the numerous claimed properties which are only present in disk-shaped media (edge lift, radial/tangential tilt, etc).

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1 – 11, 28 – 38, 51 – 55, 71 and 72 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Regarding claims 1 – 11, 28 – 38, 51 – 55, 71 and 71, it has been found that the phrase "less than about" is indefinite barring a showing in the specification as to what values around the endpoint are envisioned to be encompassed by the word "about". *Ex parte Lee*, 31 USPQ2d 1105 (BdPatApp&Int. 1993). In the instant case, applicant(s) have used the ***mathematical expression*** "less than about" (or its equivalents), namely "greater than about". In both cases, the phrases used have ***exact*** meanings (i.e. "greater than" and/or "less than") which are combined with a ***non-exact*** modifier (i.e. "about"). As such, the expressions are indefinite since the exact expression(s) "greater than" and "less than" require(s) an exact endpoint and the modifier "about" removes that

exact endpoint. Only in cases where it is clear from provided experimental data what the "about" is intended to encompass are the phrases "less than about" or "greater than about" (or their equivalents) considered definite. The examiner recommends using non mathematically exact expressions such as "about X, or less" or "about X, or more".

As an example to better illustrate the Office's position, applicants should consider the following. The limitation "less than 10", clearly covers a range of "any value less than the value of 10, ***excluding*** 10". "Less than or equal to 10", clearly covers a range of "any value less than the value of 10, ***including*** 10". These limitations are not equivalent in that one provides more coverage than the other (i.e. a value of exactly 10 would only infringe on the latter limitation). Less than "about 10" is not clear because it isn't clear if the "about 10" implies values on the side already provided for by the "less than" part (i.e. an equivalent expression to "less than 9.993" instead of "less than 10") or if it is attempting to gain additional coverage by both ***including*** 10 and then some (i.e. an equivalent expression to "less than 10.0234" instead of "less than or equal to 10"). Since the specification does not provide guidance as to what the "about" covers, the claim is indefinite in terms of U.S.C. 112 2nd Paragraph since one of ordinary skill could not reasonably ascertain the full scope of the claim.

10. Claims 1 – 3, 8, 11 – 13, 32, 33 and 38 recite limitations that require the storage media to be a disk (i.e. tilt, edge lift, and frequencies), yet there is no antecedent basis for the a disk-shaped media. See also Paragraph 6, above.

11. Claim 34 recites the limitation "surface roughness is less than about 5 Å". There is insufficient antecedent basis for this limitation in the claim since claim 30 requires a

"surface roughness of about 10 Å". For purposes of evaluating claim 34 to the prior art, the examiner has interpreted claim 30 as reading "a surface roughness of less than about 10 Å", as in claim 1.

Claim Objections

12. Claim 21 is objected to because of the following informalities: claim 21 depends upon itself. It appears that claim 21 should depend on claim 20 and for purposes of evaluating the prior art, the examiner has interpreted claim 21 as depending on claim 20. Appropriate correction is required.

13. Claims 26 and 67 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In the instant case, claims 1 and 56 already recite that the substrate comprises plastic.

14. Claim 33 is objected to because of the following informalities: claim 33 depends upon itself. It appears that claim 33 should depend on claim 32 and for purposes of evaluating the prior art, the examiner has interpreted claim 33 as depending on claim 32. Appropriate correction is required.

15. Claim 36 is objected to because of the following informalities: claim 36 depends upon itself. It appears that claim 36 should depend on claim 35 and for purposes of evaluating the prior art, the examiner has interpreted claim 36 as depending on claim 35. Appropriate correction is required.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 1 – 27, 30 – 53 and 56 – 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landin et al. (U.S. Patent No. 5,538,774).

Regarding claims 1 - 4, 26 and 30 - 34, Landin et al. disclose a data storage media comprising a substrate comprising at least one plastic portion (*Figure 2, element 8 and col. 6, lines 1 –2 and 42 – 67*), and at least one data layer on said substrate (*elements 6a and 6b*), wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein when the energy field contacts said data storage media, said energy field is incident upon said data layer before it could be incident upon said substrate (*col. 2, line 63 bridging col. 3, line 8; see also Paragraph 3 above*).

It has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily possess characteristics of claimed products where the rejection is based on *prima facie* obviousness under 35 USC 103. Therefore, the *prime facie* case

can be rebutted by ***evidence*** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) *(col. 5, lines 58 – 64; col. 11, lines 1 – 5; and examples)*.

Therefore, in addition to the above disclosed limitations, the presently claimed properties of "an edge-lift height" and "an axial displacement peak" meeting applicants' claimed limitations would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed limitations of "an edge-lift height" and "an axial displacement peak" would not have necessarily been present in every embodiment taught by Landin et al., it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables such as the "edge lift height" and "axial displacement peak" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that low values of the edge lift and axial displacement peak are desired for increased areal

recording density (see pertinent prior art cited below). *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Landin et al. fail to disclose a surface roughness meeting applicants' claimed limitations (i.e. less than 10 Å or less than 5 Å).

However, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variable "surface roughness" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that extremely low (i.e. < 10 Å) surface roughness values are required for near-field high density recording media (see pertinent prior art cited below).

Regarding independent claim 30, the claimed areal recording density is a function of the track width, track density and spatial location of the head relative to the medium, and is not a property solely of the media, per se, and therefor has been given little weight in determining patentability since it is an intended-use limitation (see pertinent prior art cited below). "[I]n apparatus, article, and composition claims, intended use must result in a ***structural difference*** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. ***If the prior art structure is capable of performing the intended use, then it meets the claim***. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art." [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02.

Regarding claims 5 – 13, 35 – 38 and 51 - 53, these claims are directed to property limitations of the claimed medium that are not explicitly disclosed by the Landin et al. reference. However, in the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*col. 5, lines 58 – 64; col. 11, lines 1 – 5; and examples).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of:

- a mechanical damping coefficient greater than 0.04 and 0.06 at a temperature of 24 °C (claims 5, 6, 35 and 36);
- a moment of inertia of less than 5.5 x 10^{-3} slug-in^2, 4.5 x 10^{-3} slug-in^2 and 4.0 x 10^{-3} slug-in^2 (claims 7 and 51 – 53);
- a radial and tangential tilt of less than 1° (claims 8 and 38);
- a moisture content which varies less than 0.5% at the claimed test conditions (claims 9 and 37);
- a specific gravity of less than 1.0 (claim 10);
- a resonant frequency of greater than 250 Hz (claim 11);
- a first modal frequency greater than an operating frequency (claim 12); and
- one or less modal frequencies less than an operating frequency (claim 13)

would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of

record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed property limitations would not have necessarily been present in every embodiment taught by Landin et al., it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables moment of inertia, the radial and tangential tilt, the moisture content variability, the specific gravity and the number of modal frequencies less than an operating frequency of the substrate, as well as increasing the mechanical damping coefficient, resonant frequency and first modal frequency to values meeting applicants' claimed limitations since one of ordinary skill in the art recognizes that controlling all of these properties to within applicants' claimed limitations is necessary to achieve a dimensionally stable, high start-stop time recording media for high areal recording density applications (see pertinent prior art cited below).

Regarding claims 14, 17, 19, 20, 22, 23, 39, 42, 44, 45, 47 and 48, Landin et al. disclose cores meeting applicants' claimed limitations (i.e. solid or hollow cores having substantially constant thickness) (*Figures 2 – 4b, elements 8, 12a/12b, 32, 33, 35 and 52 – 54*).

Regarding claims 15, 16, 18, 40, 41, 43, 56 – 61, 63 and 64, Landin et al. disclose cores having varied thickness (*Figure 4b, where the core varies from zero to non-zero across the width of the medium – elements 52 – 54*). Landin et al. further teach that the damping layer dimensions can be controlled depending on the area with the greatest vibrational stresses (*col. 5, lines 25 – 30*). The exact geometry of the core

is therefore deemed an obvious matter of design choice to control where the most damping occurs (as well as controlling the moment of inertia and specific gravity of the substrate), since such a modification of the core would have involved a mere change in the size of a component. A change in the size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Regarding claims 21, 27, 46, 62, 67, 69 and 70, Landin et al. disclose substrate and core materials meeting applicants' claimed limitations (*col. 5, lines 58 – 64; col. 6, lines 1 – 2 and 42 – 67; and col. 7, lines 23 - 67*).

The limitation "preformed cores" and "formed in situ with said substrate" in claims 24, 25, 49, 50, 65 and 66 are product-by-process limitation and are not further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. ***The patentability of a product does not depend on its method of production***. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." [emphasis added] *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. Once a product appearing substantially identical is found, the burden shifts to applicant to show an ***unobvious*** difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). In the instant case, the final product is deemed to be the same whether the damping material (i.e. "core") was

formed along with the rest of the substrate or if the damping material was performed and then made into the substrate.

18. Claims 28, 29, 54, 55, 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landin et al. as applied above, and further in view of Wu et al. (U.S. Patent No. 6,156,422).

Landin et al. is relied upon as described above.

Landin et al. fail to disclose the coercivity of the data storage layer.

However, Wu et al. teach that for high areal recording density, the "linear recording density can be increased by increasing the coercivity of the magnetic recording medium" (*col. 1, lines 23 – 33*) and further teaches coercivity values meeting applicants' claimed limitations as desired for high areal recording density recording media (*Figure 4A*).

It would therefore have been obvious to one having ordinary skill in the art to have modified the invention of Landin et al. by increasing the coercivity of the data storage layer to values meeting applicants' claimed limitations as taught by Wu et al., since an increased coercivity results in an increased areal recording density.

19. Claims 1 – 14, 17, 18, 20, 21, 24 – 26, 30 – 39, 42, 43, 45, 46 and 49 – 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-096921 A. See provided Derwent Abstract Translation of JP '921 A.

Regarding claims 1 - 4, 26 and 30 - 34, JP '921 A disclose a data storage media comprising a substrate comprising at least one plastic portion (*Abstract - "substrate formed of plastics"*), and at least one data layer on said substrate (*Abstract – "a magnetic layer"*), wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein when the energy field contacts said data storage media, said energy field is incident upon said data layer before it could be incident upon said substrate (*in view of Figures since the protective lubricating layer is located between the magnetic layer and the side where the magnetic head would be; see also Paragraph 3, above*).

It has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily possess characteristics of claimed products where the rejection is based on *prima facie* obviousness under 35 USC 103. In the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Abstract and Figures).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of "an edge-lift height" and "an axial displacement peak" meeting applicants' claimed limitations would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no

evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed limitations of "an edge-lift height" and "an axial displacement peak" would not have necessarily been present in every embodiment taught by JP '921 A, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables such as the "edge lift height" and "axial displacement peak" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that low values of the edge lift and axial displacement peak are desired for increased areal recording density (see pertinent prior art cited below).

JP '921 A fail to disclose a surface roughness meeting applicants' claimed limitations (i.e. less than 10 Å or less than 5 Å).

However, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variable "surface roughness" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that extremely low (i.e. < 10 Å) surface roughness values are required for near-field high density recording media (see pertinent prior art cited below).

Regarding independent claim 30, the claimed areal recording density is a function of the track width, track density and spatial location of the head relative to the medium, and is not a property solely of the media, per se, and therefor has been given little weight in determining patentability since it is an intended-use limitation (see pertinent prior art cited below).

Regarding claims 5 – 13, 35 – 38 and 51 - 53, these claims are directed to property limitations of the claimed medium that are not explicitly disclosed by the JP '921 A reference. However, in the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Abstract and Figures).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of:

- a mechanical damping coefficient greater than 0.04 and 0.06 at a temperature of 24 °C (claims 5, 6, 35 and 36);
- a moment of inertia of less than 5.5×10^{-3} slug-in^2, 4.5×10^{-3} slug-in^2 and 4.0×10^{-3} slug-in^2 (claims 7 and 51 – 53);
- a radial and tangential tilt of less than 1° (claims 8 and 38);
- a moisture content which varies less than 0.5% at the claimed test conditions (claims 9 and 37);
- a specific gravity of less than 1.0 (claim 10);
- a resonant frequency of greater than 250 Hz (claim 11);
- a first modal frequency greater than an operating frequency (claim 12); and
- one or less modal frequencies less than an operating frequency (claim 13)

would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed property limitations would not have necessarily been present in every embodiment taught by JP '921 A, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables moment of inertia, the radial and tangential tilt, the moisture content variability, the specific gravity and the number of modal frequencies less than an operating frequency of the substrate, as well as increasing the mechanical damping coefficient, resonant frequency and first modal frequency to values meeting applicants' claimed limitations since one of ordinary skill in the art recognizes that controlling all of these properties to within applicants' claimed limitations is necessary to achieve a dimensionally stable, high start-stop time recording media for high areal recording density applications (see pertinent prior art cited below).

Regarding claims 14, 17, 20, 39, 42 and 45, JP '921 A disclose cores (*Figure 1, element 1a*) meeting applicants' claimed limitations (i.e. solid core having substantially constant thickness) (*Abstract*). The examiner notes that the plastic substrate (*element 1a*) is a core comprising at least one filled cavity (i.e. the entire layer is "filled").

Regarding claims 18 and 43, JP '921 A disclose a support for a magnetic recording medium wherein the medium can be in the form of a disk. A disk would result in a plastic support (i.e. applicants' "core") being in the shape of a ring, thereby meeting applicants' claimed limitations.

Regarding claims 21 and 46, JP '921 A disclose substrate and core materials meeting applicants' claimed limitations (*Abstract – i.e. the entire core comprises plastics or composite materials composed of plastics and ceramic*).

The limitation "preformed cores" and "formed in situ with said substrate" in claims 24, 25, 49 and 50 are product-by-process limitation and are not further limiting in so far as the structure of the product is concerned for the reasons cited above.

20. Claims 15, 16, 19, 22, 23, 27, 40, 41, 44, 47, 48 and 56 – 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '921 A as applied above, and further in view of Landin et al. ('774).

JP '921 A is relied upon as described above.

Regarding claims 15, 16, 19, 22, 23, 40, 41, 44, 47, 48 and 56 - 67, JP '921 A fail to disclose a core having a varied thickness meeting applicants' claimed limitations.

However, Landin et al. teach plastic cores of composite substrates having varied thickness and multiple portions (*Figure 4b, where the core varies from zero to non-zero across the width of the medium – elements 52 – 54*). Landin et al. further teach that the plastic core dimensions can be controlled depending on the area with the greatest vibrational stresses (*col. 5, lines 25 – 30*). The exact geometry of the core is therefore deemed an obvious matter of design choice to control where the most damping occurs (as well as controlling the moment of inertia and specific gravity of the substrate), since such a modification of the core would have involved a mere change in the size of a component. A change in the size is generally recognized as being within the level of ordinary skill in the art.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of JP '921 A to include a core having

varied thickness as taught by Landin et al. since varying the core dimensions can be used to optimize the damping, moment of inertia and specific gravity of the substrate, especially in the areas with the greatest vibrational stresses.

Regarding claims 27 and 68, Landin et al. teach plastics meeting applicants' claimed limitations as known substrate + core materials since they possess good damping properties (*col. 6, lines 1 – 2 and lines 42 – 67*).

Regarding claims 69 and 70, Landin et al. disclose adding fillers meeting applicants' claimed limitations inorder to improve the damping properties (*col. 7, lines 23 - 67*).

21. Claims 28, 29, 54, 55, 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '921 A as applied above, and further in view of Wu et al. (U.S. Patent No. 6,156,422).

JP '921 A is relied upon as described above.

JP '921 A fail to disclose the coercivity of the data storage layer.

However, Wu et al. teach that for high areal recording density, the "linear recording density can be increased by increasing the coercivity of the magnetic recording medium" (*col. 1, lines 23 – 33*) and further teaches coercivity values meeting applicants' claimed limitations as desired for high areal recording density recording media (*Figure 4A*).

It would therefore have been obvious to one having ordinary skill in the art to have modified the invention of JP '921 A by increasing the coercivity of the data storage

layer to values meeting applicants' claimed limitations as taught by Wu et al., since an increased coercivity results in an increased areal recording density.

22. Claims 1 – 14, 17, 18, 20, 21, 24 – 39, 42, 43, 45, 46 and 49 – 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (U.S. Patent No. 6,433,964 B1).

Regarding claims 1 - 4, 26 and 30 - 34, Chang discloses a data storage media comprising a substrate comprising at least one plastic portion (*Figures; col. 4, lines 23 – 57; and Example 1*), and at least one data layer on said substrate (*col. 3, lines 54 – 60 and Example 1*), wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein when the energy field contacts said data storage media, said energy field is incident upon said data layer before it could be incident upon said substrate (*in view of Figures and col. 4, lines 14 - 21 since the protective and lubricating layers are located between the magnetic layer and the side where the magnetic head would be; see also Paragraph 3, above*).

It has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily possess characteristics of claimed products where the rejection is based on *prima facie* obviousness under 35 USC 103. In the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a

composite substrate formed from both rigid materials and plastic materials) (*Figures; col. 4, lines 23 – 57 and Example 1).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of "an edge-lift height" and "an axial displacement peak" meeting applicants' claimed limitations would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed limitations of "an edge-lift height" and "an axial displacement peak" would not have necessarily been present in every embodiment taught by Chang, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables such as the "edge lift height" and "axial displacement peak" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that low values of the edge lift and axial displacement peak are desired for increased areal recording density (see pertinent prior art cited below).

Chang fails to disclose a surface roughness meeting applicants' claimed limitations (i.e. less than 10 Å or less than 5 Å).

However, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variable "surface roughness" to values meeting applicants' claimed limitations through routine experimentation, especially given the

knowledge that extremely low (i.e. < 10 Å) surface roughness values are required for near-field high density recording media (see pertinent prior art cited below).

Regarding independent claim 30, the claimed areal recording density is a function of the track width, track density and spatial location of the head relative to the medium, and is not a property solely of the media, per se, and therefor has been given little weight in determining patentability since it is an intended-use limitation (see pertinent prior art cited below).

Regarding claims 5 – 13, 35 – 38 and 51 - 53, these claims are directed to property limitations of the claimed medium that are not explicitly disclosed by the Chang reference. However, in the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Figures; col. 4, lines 23 – 57 and Example 1).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of:

- a mechanical damping coefficient greater than 0.04 and 0.06 at a temperature of 24 °C (claims 5, 6, 35 and 36);
- a moment of inertia of less than 5.5 x 10^{-3} slug-in^2, 4.5 x 10^{-3} slug-in^2 and 4.0 x 10^{-3} slug-in^2 (claims 7 and 51 – 53);
- a radial and tangential tilt of less than 1° (claims 8 and 38);
- a moisture content which varies less than 0.5% at the claimed test conditions (claims 9 and 37);

- a specific gravity of less than 1.0 (claim 10);
- a resonant frequency of greater than 250 Hz (claim 11);
- a first modal frequency greater than an operating frequency (claim 12); and
- one or less modal frequencies less than an operating frequency (claim 13)

would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed property limitations would not have necessarily been present in every embodiment taught by Chang, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables moment of inertia, the radial and tangential tilt, the moisture content variability, the specific gravity and the number of modal frequencies less than an operating frequency of the substrate, as well as increasing the mechanical damping coefficient, resonant frequency and first modal frequency to values meeting applicants' claimed limitations since one of ordinary skill in the art recognizes that controlling all of these properties to within applicants' claimed limitations is necessary to achieve a dimensionally stable, high start-stop time recording media for high areal recording density applications (see pertinent prior art cited below).

Regarding claims 14, 17, 20, 39, 42 and 45, Chang discloses cores (*Figures*) meeting applicants' claimed limitations (i.e. solid core having substantially constant

thickness). The examiner notes that the core (*Figures 3 and 4*) is a core comprising at least one filled cavity (i.e. the entire layer is "filled").

Regarding claims 18 and 43, Chang discloses a support for a magnetic recording medium wherein the medium can be in the form of a disk (*col. 2, lines 60 – 61*). A disk would result in a plastic support (i.e. applicants' "core") being in the shape of a ring, thereby meeting applicants' claimed limitations.

Regarding claims 21 and 46, Chang discloses substrate and core materials meeting applicants' claimed limitations (*Figures and col. 4, lines 21 - 27 – i.e. the entire core comprises plastic*).

The limitation "preformed cores" and "formed in situ with said substrate" in claims 24, 25, 49 and 50 are product-by-process limitation and are not further limiting in so far as the structure of the product is concerned for the reasons cited above.

Regarding claim 27, Chang discloses polymers meeting applicants' claimed limitations (*col. 4, lines 54 – 57*).

Regarding claims 28, 29, 54 and 55, Chang discloses coercivity values meeting applicants' claimed limitations (*col. 3, lines 54 – 57*).

23. Claims 15, 16, 19, 22, 23, 40, 41, 44, 47, 48 and 56 – 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang as applied above, and further in view of Landin et al. ('774).

Chang is relied upon as described above.

Regarding claims 15, 16, 19, 22, 23, 40, 41, 44, 47, 48, 56 – 67, 71 and 72, Chang fails to disclose a core having a varied thickness meeting applicants' claimed limitations.

However, Landin et al. teach plastic cores of composite substrates having varied thickness and multiple portions (*Figure 4b, where the core varies from zero to non-zero across the width of the medium – elements 52 – 54*). Landin et al. further teach that the plastic core dimensions can be controlled depending on the area with the greatest vibrational stresses (*col. 5, lines 25 – 30*). The exact geometry of the core is therefore deemed an obvious matter of design choice to control where the most damping occurs (as well as controlling the moment of inertia and specific gravity of the substrate), since such a modification of the core would have involved a mere change in the size of a component. A change in the size is generally recognized as being within the level of ordinary skill in the art.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Chang to include a core having varied thickness as taught by Landin et al. since varying the core dimensions can be used to optimize the damping, moment of inertia and specific gravity of the substrate, especially in the areas with the greatest vibrational stresses.

Regarding claims 27 and 68, Landin et al. teach using plastics meeting applicants' claimed limitations as known substrate + core materials since they possess good damping properties (*col. 6, lines 1 – 2 and lines 42 – 67*).

Regarding claims 69 and 70, Landin et al. disclose adding fillers meeting applicants' claimed limitations inorder to improve the damping properties (*col. 7, lines 23 - 67*).

24. Claims 1 - 27, 30 – 53, 56 and 58 - 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otada et al. (JP 63-205817 A. See provided Abstract Translation of JP '817 A.

Regarding claims 1 - 4, 26 and 30 – 34, Otada et al. disclose a data storage media comprising a substrate comprising at least one plastic portion (*Abstract - "heat resistant plastic layer"*), and at least one data layer on said substrate (*Abstract "and magnetic layer"*), wherein said data layer can be at least partly read from, written to, or a combination thereof by at least one energy field; and wherein when the energy field contacts said data storage media, said energy field is incident upon said data layer before it could be incident upon said substrate (*in view of Figures and Abstract since the magnetic layer is deposited after the underlying layer and it is known in the art that the underlayers are located on the opposite side of the magnetic layer from the side where the magnetic head would be; see also Paragraph 3 above*).

It has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily possess characteristics of claimed products where the rejection is

based on *prima facie* obviousness under 35 USC 103. In the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Abstract and Figures).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of "an edge-lift height" and "an axial displacement peak" meeting applicants' claimed limitations would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed limitations of "an edge-lift height" and "an axial displacement peak" would not have necessarily been present in every embodiment taught by Otada et al., it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables such as the "edge lift height" and "axial displacement peak" to values meeting applicants' claimed limitations through routine experimentation, especially given the knowledge that low values of the edge lift and axial displacement peak are desired for increased areal recording density (see pertinent prior art cited below).

Otada et al. fail to disclose a surface roughness meeting applicants' claimed limitations (i.e. less than 10 Å or less than 5 Å).

However, it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variable "surface roughness" to values meeting

applicants' claimed limitations through routine experimentation, especially given the knowledge that extremely low (i.e. < 10 Å) surface roughness values are required for near-field high density recording media (see pertinent prior art cited below).

Regarding independent claim 30, the claimed areal recording density is a function of the track width, track density and spatial location of the head relative to the medium, and is not a property solely of the media, per se, and therefor has been given little weight in determining patentability since it is an intended-use limitation (see pertinent prior art cited below).

Regarding claims 5 – 13, 35 – 38 and 51 - 53, these claims are directed to property limitations of the claimed medium that are not explicitly disclosed by the Otada et al. reference. However, in the instant case, the claimed and prior art products are substantially identical in structure and composition (i.e. a composite substrate formed from both rigid materials and plastic materials) (*Abstract and Figures).*

Therefore, in addition to the above disclosed limitations, the presently claimed properties of:

- a mechanical damping coefficient greater than 0.04 and 0.06 at a temperature of 24 °C (claims 5, 6, 35 and 36);
- a moment of inertia of less than 5.5×10^{-3} slug-in^2, 4.5×10^{-3} slug-in^2 and 4.0×10^{-3} slug-in^2 (claims 7 and 51 – 53);
- a radial and tangential tilt of less than 1° (claims 8 and 38);
- a moisture content which varies less than 0.5% at the claimed test conditions (claims 9 and 37);

- a specific gravity of less than 1.0 (claim 10);
- a resonant frequency of greater than 250 Hz (claim 11);
- a first modal frequency greater than an operating frequency (claim 12); and
- one or less modal frequencies less than an operating frequency (claim 13)

would have necessarily been present because the claimed and prior art products are substantially identical in structure and composition, and there is no evidence currently of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Furthermore, even in the instance that the claimed property limitations would not have necessarily been present in every embodiment taught by Otada et al., it would have been obvious to one having ordinary skill in the art to have minimized the cause effective variables moment of inertia, the radial and tangential tilt, the moisture content variability, the specific gravity and the number of modal frequencies less than an operating frequency of the substrate, as well as increasing the mechanical damping coefficient, resonant frequency and first modal frequency to values meeting applicants' claimed limitations since one of ordinary skill in the art recognizes that controlling all of these properties to within applicants' claimed limitations is necessary to achieve a dimensionally stable, high start-stop time recording media for high areal recording density applications (see pertinent prior art cited below).

Regarding claims 14, 17, 20, 39, 42 and 45, Otada et al. disclose cores (*Figures 1, 2 and 4, element 1*) meeting applicants' claimed limitations (i.e. solid core having substantially constant thickness) (*Abstract*). The examiner notes that the ceramic

substrate (*Figures 1, 2 and 4 - element 1*) is a core comprising at least one filled cavity (i.e. the entire layer is "filled").

Regarding claims 15, 16, 18, 19, 22, 23, 40, 41, 43, 44, 47, 48, 56 - 61, 63, 64 and 67, Otada et al. disclose cores of composite substrates having varied thickness and multiple portions (*Figure 3, where the core varies from zero to non-zero across the width of the medium and wherein the interior sections of element 1 would be filled by the heat resistant plastic layer, resulting in a "core" layer comprising both ceramic and plastic, the entire "core" coated by additional heat resistant plastic*). The exact geometry of the core is therefore deemed an obvious matter of design choice to control where the most damping occurs (as well as controlling the moment of inertia and specific gravity of the substrate), since such a modification of the core would have involved a mere change in the size of a component. A change in the size is generally recognized as being within the level of ordinary skill in the art. In addition, it is known to one of ordinary skill in the art that the material and dimensions of the core will effect the damping properties, as well as the moment of inertia and specific gravity of the substrate (see pertinent prior art cited below).

Regarding claims 21, 46 and 62, Otada et al. disclose substrate and core materials meeting applicants' claimed limitations (*Abstract and Figures – " the ceramic substrate 1"*).

The limitation "preformed cores" and "formed in situ with said substrate" in claims 24, 25, 49, 50, 65 and 66 are product-by-process limitation and are not further limiting in so far as the structure of the product is concerned for the reasons cited above.

Regarding claims 27 and 68, Otada et al. disclose plastics meeting applicants' claimed limitations (*Abstract – polyether imide*).

25. Claims 69 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otada et al. as applied above, and further in view of Landin et al. ('774).

Otada et al. is relied upon as described above.

Otada et al. fail to disclose adding reinforcements to the heat resistant plastic layer.

However, Landin et al. teach adding fillers meeting applicants' claimed limitations to plastic layers in composite substrates inorder to improve the damping and physical properties of the plastic layers (*col. 7, lines 23 – 67 and col. 9, lines 10 - 15*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Otada et al. to include fillers meeting applicants' claimed limitations as taught by Landin et al. inorder to improve the damping and physical properties of the plastic layers.

26. Claims 28, 29, 54, 55, 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otada et al. as applied above, and further in view of Wu et al. ('422).

Otada et al. is relied upon as described above.

Otada et al. fail to disclose the coercivity of the data storage layer.

However, Wu et al. teach that for high areal recording density, the "linear recording density can be increased by increasing the coercivity of the magnetic

recording medium" (*col. 1, lines 23 – 33*) and further teaches coercivity values meeting applicants' claimed limitations as desired for high areal recording density recording media (*Figure 4A*).

It would therefore have been obvious to one having ordinary skill in the art to have modified the invention of Otada et al. by increasing the coercivity of the data storage layer to values meeting applicants' claimed limitations as taught by Wu et al., since an increased coercivity results in an increased areal recording density.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The examiner notes that there are several references which disclose composite "plastic + rigid material" substrates which are substantially identical to applicants' claimed products. These references include: Lazzari (U.S. Patent No. 4,911,967); Ishida et al. (U.S. Patent No. 6,347,016 B1); JP 61-105725 A; Tanabe et al. (U.S. Patent No. 5,447,767); Nakayama et al. (U.S. Patent No. 4,673,602); Lewis et al. (U.S. Patent No. 4,363,844); JP 61-242327 A; JP 61-131232 A; JP 62-124625 A; Krongelb et al. (U.S. Patent No. 4737,877); Leonard et al. (U.S. Patent No. 4,619,804); JP 02-096919 A; JP 61-092814 A; and JP 62-134836 A.

In addition, many references deal with controlling or optimizing physical and mechanical properties of substrates. These are:

- Surface Roughness – Hirata et al. (U.S. Patent No. 6,127,017 – *teach plastic supports where Ra < 20 Å*); Annacone et al. (U.S. Patent No. 6,194,045 – *teach core/shell ceramic substrate with Ra < 10 Å*); Yamaguchi (U.S. Patent No. 5,866,489 – *teach glass substrate with Ra = 2 – 10 Å*); Hartog et al. (U.S. Patent No. 6,236,542 B1 – *teach metal/glass/ceramic substrates polished to ~1 Å Ra*); Tenhover et al. (U.S. Patent No. 5,741,403 – *teach Ra < 25 Å required for high areal recording density*); Bonnebat et al. (U.S. Patent No. 4,987,020 – *teach minimizing Ra as a critical feature of substrates*);
- Modal and Resonant Frequencies – Miyake et al. (U.S. Patent No. 5,585,159 – *teach damping to avoid the resonant frequency being in the operating temperature range*); Kuromiya et al. (U.S. Patent No. 5,585,989 – *teach having the first modal frequency above the servo band*); Oniki et al. (U.S. Patent No. 5,875,083 – *teach avoiding the resonant frequency being within the servo range*);
- Variable thickness, filled/hollow, shape of cores/substrates – Landin et al. ('774) and Otada et al. ('817 A) as described above; Annacone et al. ('045 – *teach core/shell structures which can vary in shape and size*); Kikuchi (U.S. Patent No. 5,119,259 – *teach hollow substrates*); Oishi (U.S. Patent No. 4,742,420 – *teach porous and hollow substrates*); Zagar et al. (U.S. Patent No. 5,552,009 – *teach disk, tape or other shaped media*); Fujii et al. (U.S. Patent No. 5,292,550 – *teach making entire substrate convex or concave*);

Vedamuttu (U.S. Patent No. 6,165,391 – *teach substrates being variable shape or non-homogenous*);

- Equivalence of substrates for magnetic/optical/magneto-optical – Nakayama et al. (U.S. Patent No. 4,673,602); Landin et al. ('774);
- Areal Recording Density – Hartog et a. ('542), Tenhover et al. ('403) and Annacone et al. ('045) all teach that the areal recording density is a function of more than just the medium;
- Specific Gravity/density – Mori et al. (U.S. Patent Application Publication 2001/0022705 A1 – *teach controlling the specific gravity*); Stanish et al. (U.S. Patent No. 5,948,495 – *teach controlling the density*); and Bonnebat et al. ('020 – *teach controlling specific gravity*);
- Axial displacement peak – Sandstrom (U.S. Patent No. 5,972,461 – *teach minimizing the axial displacement*); Quantegy article (*teach ranges for acceptable axial displacement*);
- Warp/deflection/tilt – Sandstrom ('461 – *teach minimizing the warp/deflection and tilt*); Quantegy article (*teach minimizing deflection and tilt*); Zou et al. (U.S. Patent No. 5,981,015 – *teach minimizing deflection and warp*); Czubarrow (U.S. Patent No. 6,030,681 – *teach minimizing warp*); Stanish et al. ('495 – *teach minimizing warp and deflection*);
- Thermal Characteristics – Czubarrow ('681 – *teach controlling the thermal characteristics to be stable*); Bonnebat et al. ('020 – *teach having stable*

thermal characteristics); Quantegy article (*teach having stable systems for 1,000,000+ cycles in a wide range of temperature and humidity*);

- Moment of Inertia – Bonnebat et al. ('020 – *teach minimizing the moment of inertia*); Quantegy article (*teach minimizing the moment of inertia of the substrate*);
- Damping Characteristics – Landin et al. ('774); Mori et al. ('705 – *teach values for the damping coefficient*)

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

KMB
February 2, 2003

Paul Thibodeau
Supervisory Patent Examiner
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